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# Evolution of GIS at the City of Lansing

Sam Quon, Applications Manager

Emily St. Clair, Cityworks Administrator

Andy Skelton, GIS/Cityworks Analyst

Lyne Roberts, Data Systems Administrator

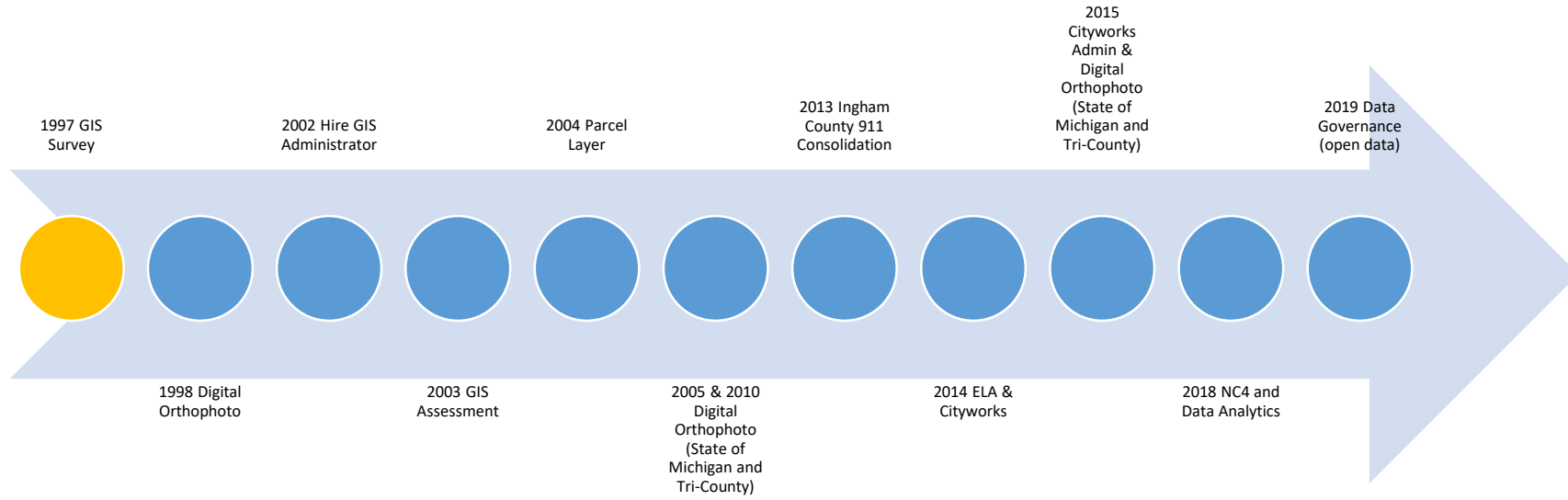
Rob Gerth, Data Analyst



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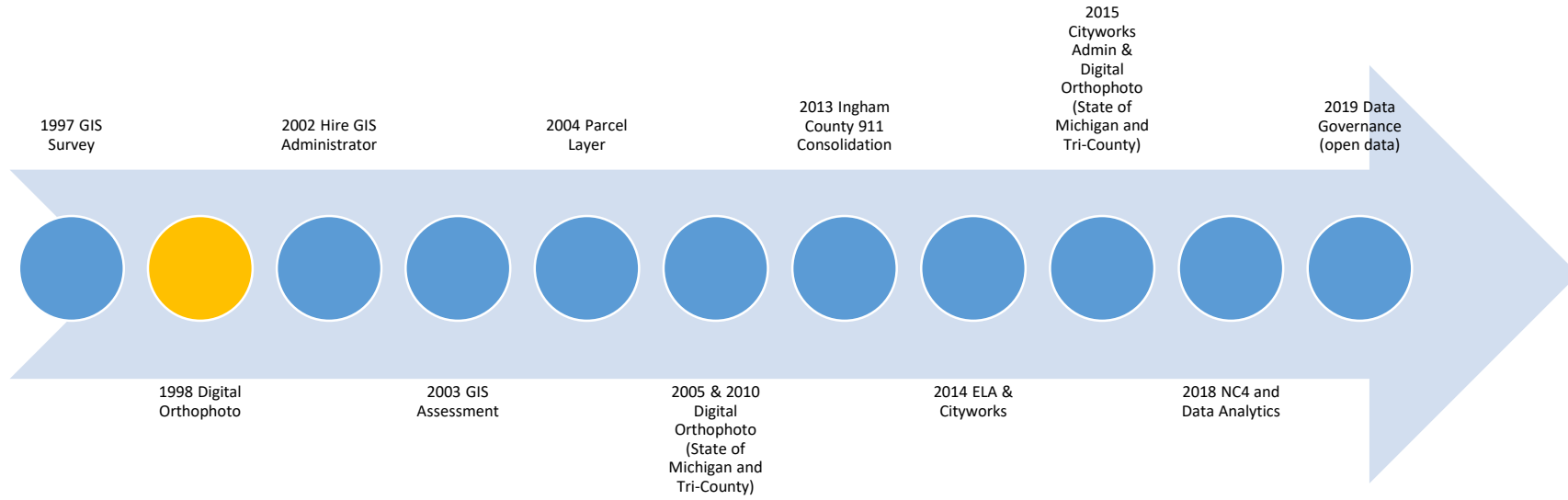
- GIS started in Mid-1990s
- No standards
- Departments purchased own software
  - Caliper
  - ESRI
  - MapInfo
- Data in department silos



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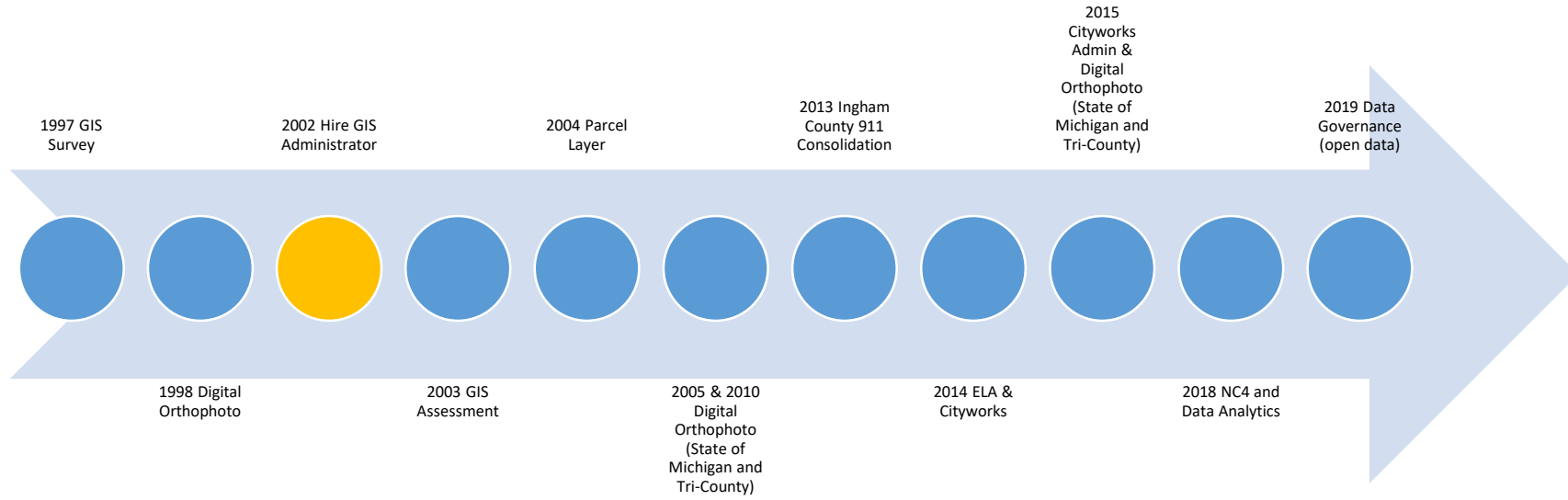




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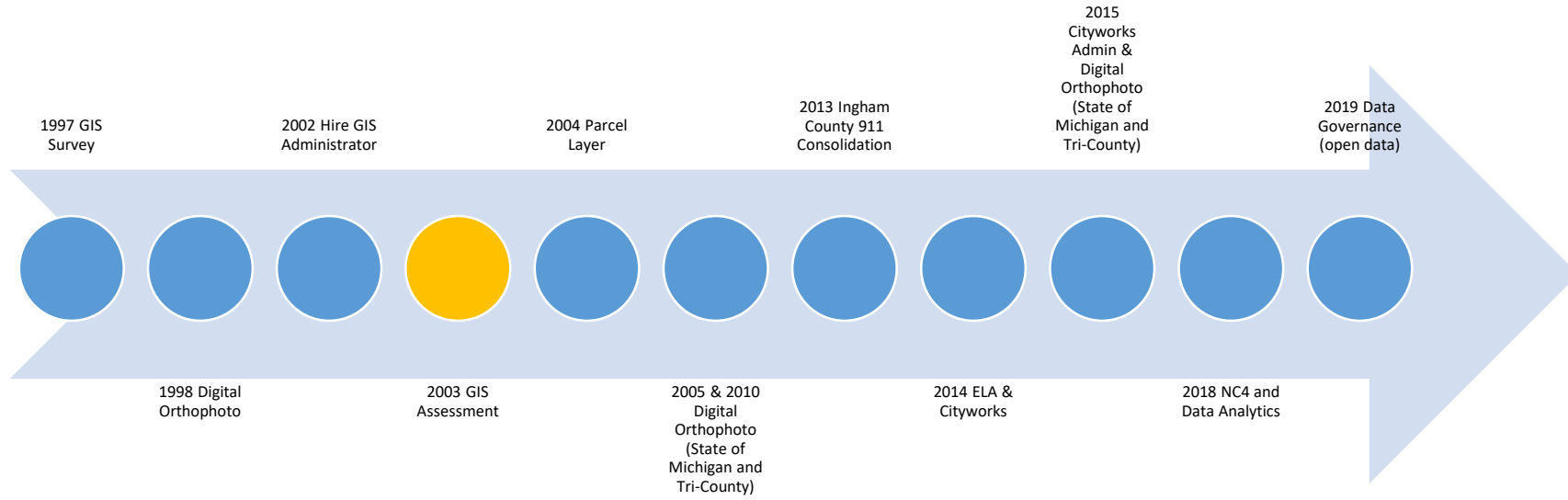




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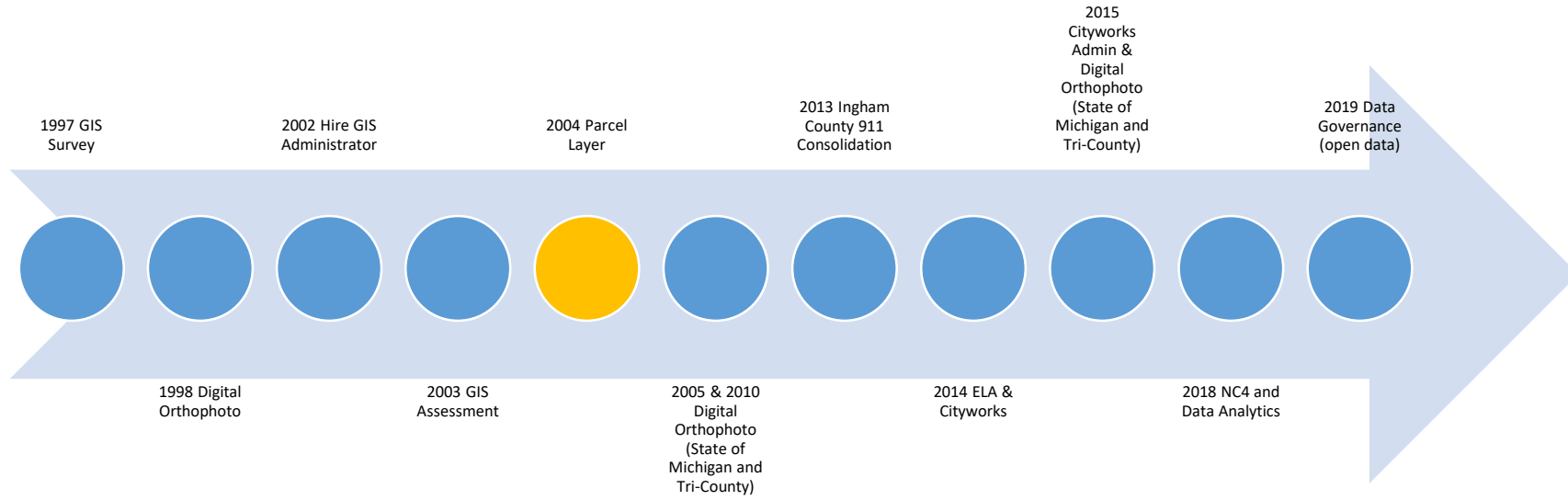




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North Lansing



South Lansing

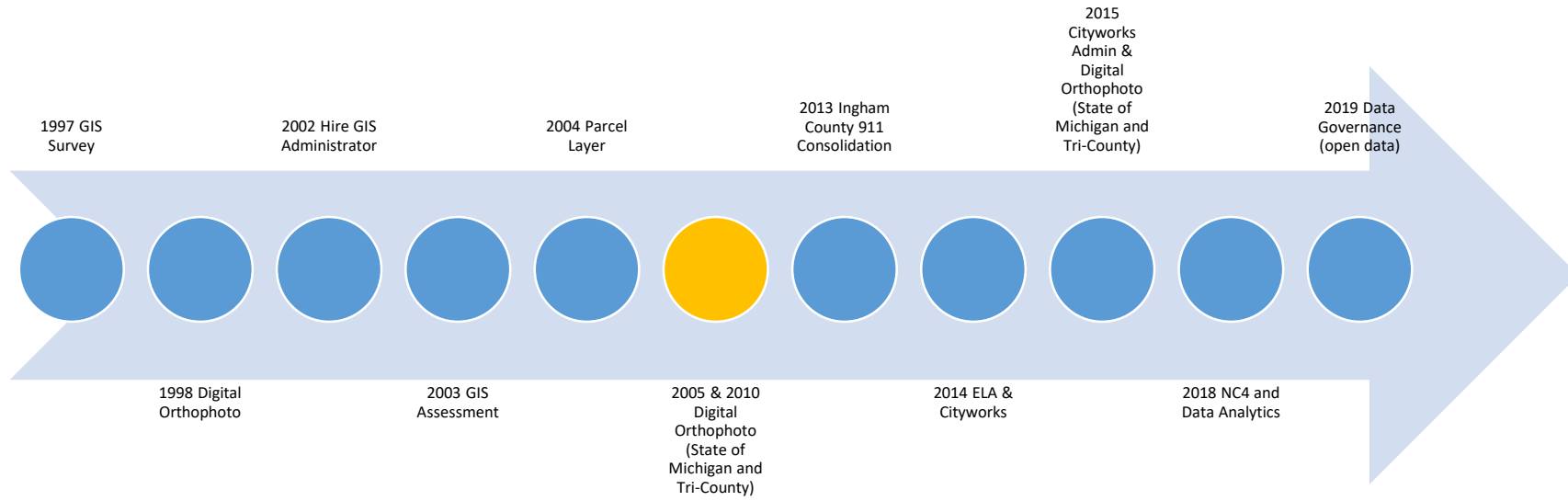




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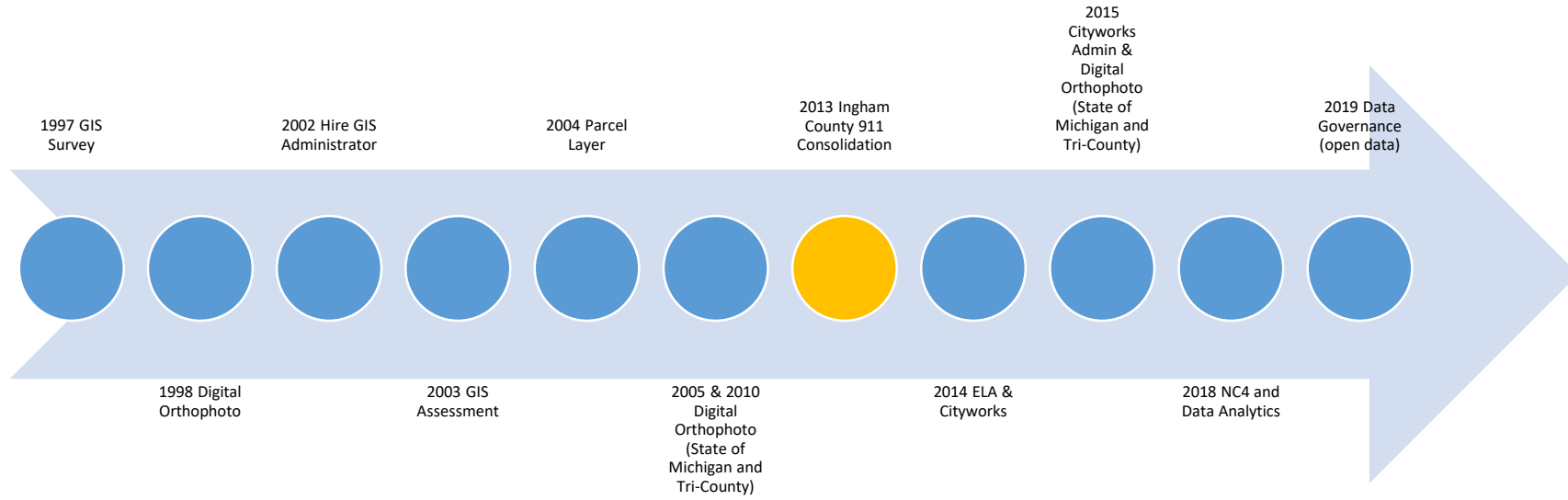




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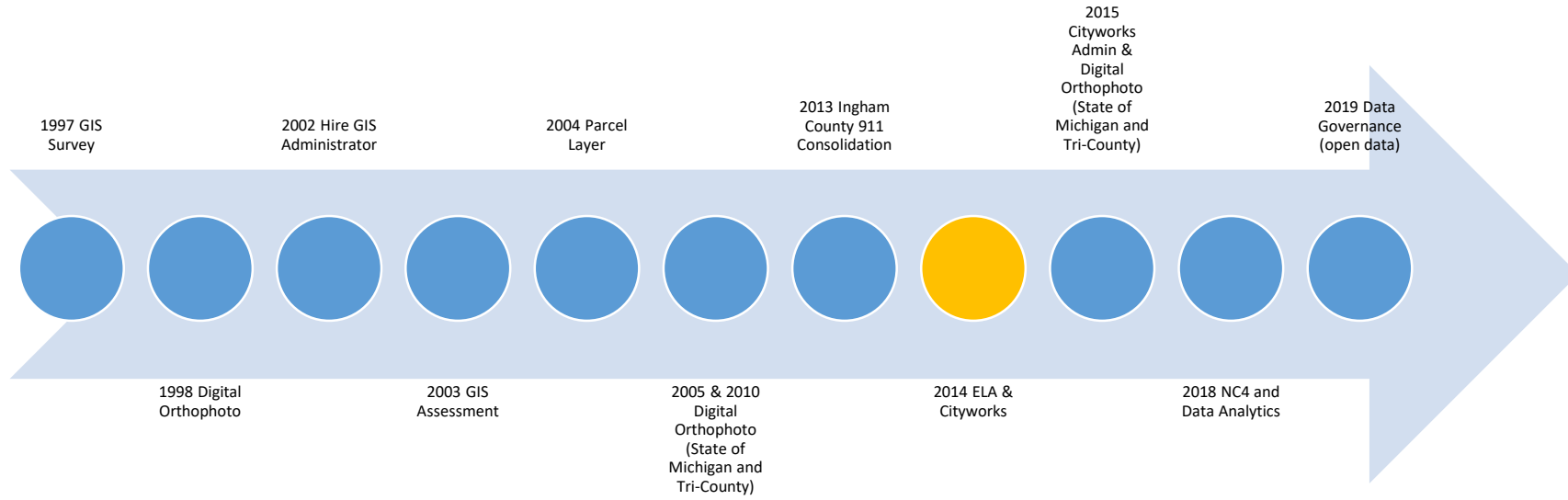




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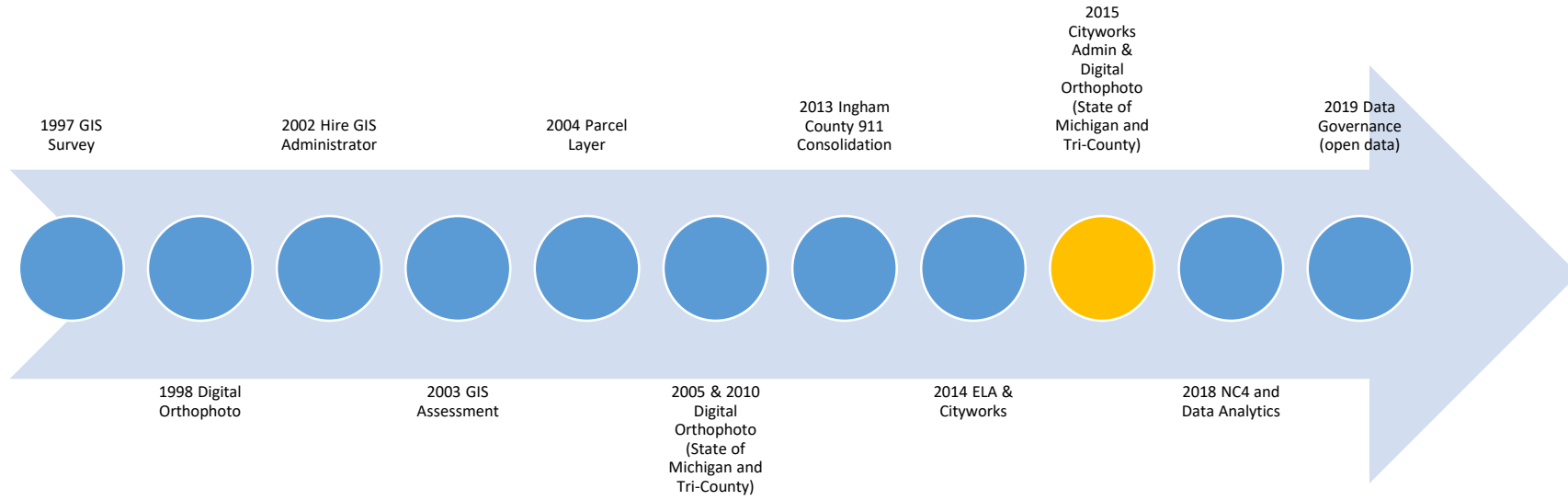
- ESRI Enterprise License Agreement
  - SQL DB (5)
  - ArcGIS Servers (7)
  - Portal
  - DataStore
  - GeoEvent Server
- Departments
  - Assessor
  - Financial Empowerment
  - Fire
  - Parks
  - Planning
  - Police
  - Public Service
- Users
  - Power Users (14)
  - General Users (20)
  - AGOL Users (117)
    - Internal
    - External



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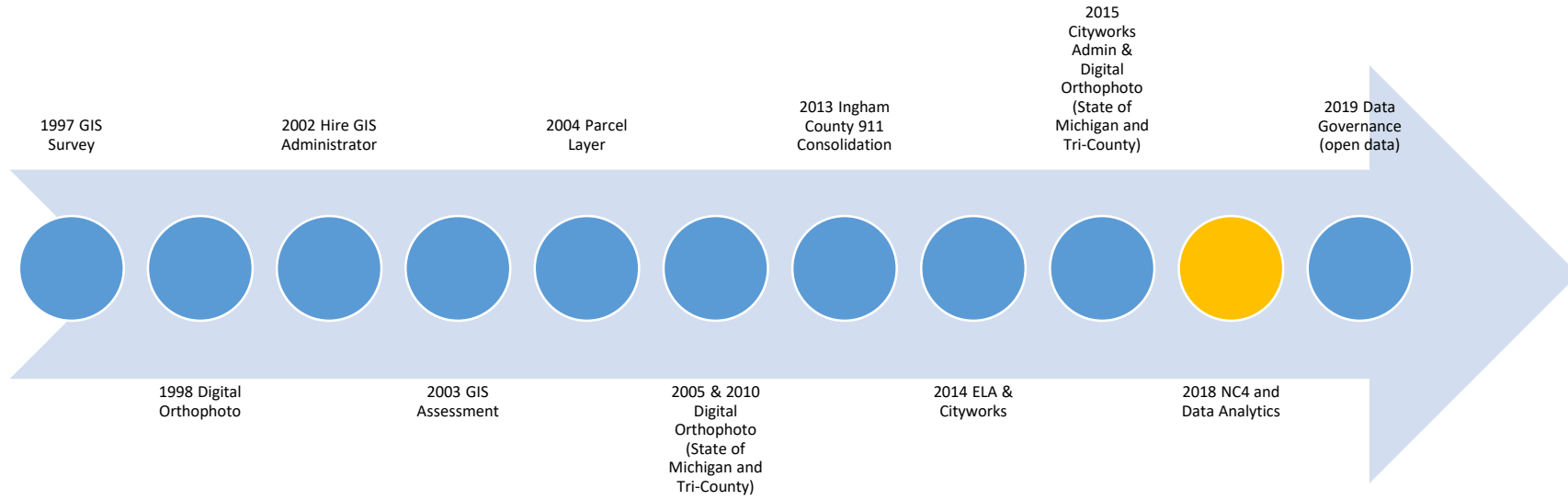




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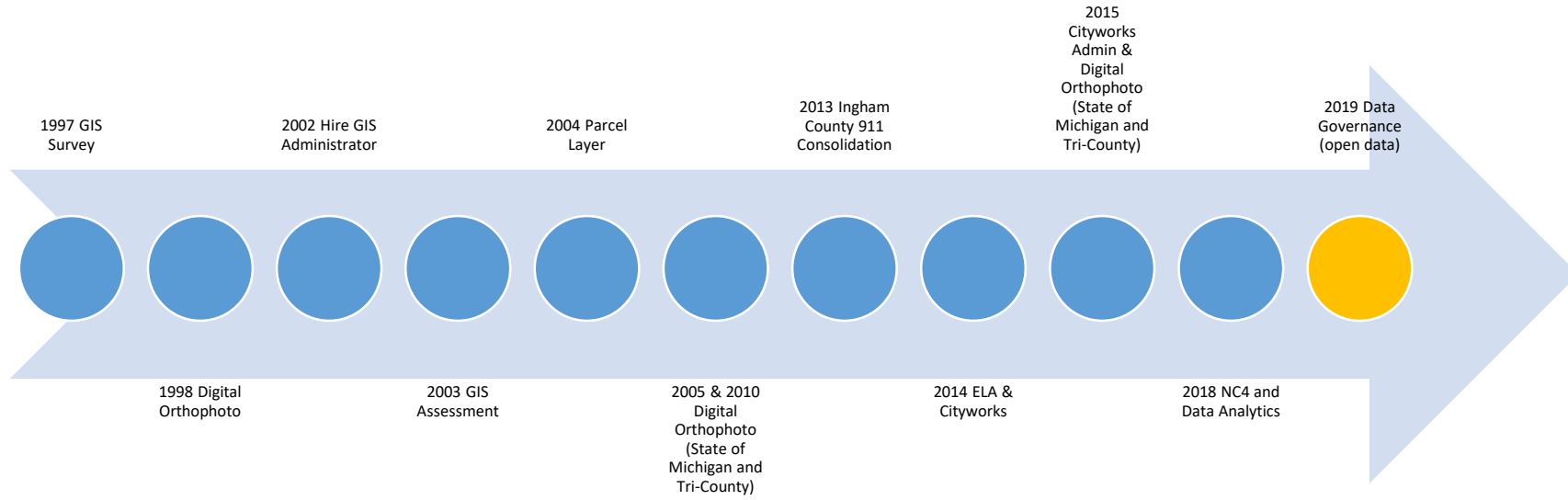




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## About What Works Cities

WHAT WORKS CITIES HELPS LOCAL GOVERNMENTS IMPROVE RESIDENTS' LIVES BY USING DATA AND EVIDENCE EFFECTIVELY TO TACKLE PRESSING CHALLENGES.

Launched by Bloomberg Philanthropies in April 2015, What Works Cities is one of the largest-ever philanthropic efforts to enhance cities' use of data and evidence. Cities across the country are more effectively driving change and delivering results for residents by participating in our [What Works Cities Certification](#) program, the national standard of excellence for data-driven, well-managed local government. The program is open to any city with a population of 30,000 or more.



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# Cityworks

Emily St. Clair



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- 2014
- Single Department Solution
  - Public Service
- Enterprise Solution
  - Police Department
  - Fire Department
  - Parking Services



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## Quick Overview: Public Service

- Operations and Maintenance
  - Street Crews – Pothole Repair, Winter Snow Removal, FEMA Storm Damage Cleanup
  - Sewer – CCTV & Inspections, Miss Dig Locate
  - Forestry/Grounds – Bombardier Routes, Tree-Keeper
- WWTP – Corrective Maintenance, Preventative Maintenance, SCADA
- Property Management – HVAC, Seasonal Shut-offs, Building Maintenance
- Parks and Recreation – Special Event Permits
- Engineering – Soil Erosion Permits, ROW Permits



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# Quick Overview: Parking Services

- Route Accountability
- Parking Ramp/Lots Maintenance
- Meters
  - Bag Meter
  - Meter Maintenance



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# Quick Overview: Police Department

- TOW Files
  - Abandoned or Towed Vehicles
  - Cityworks Inspection Template
  - Reporting Services



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# Quick Overview: Fire Department

- Phase 1: EMS Supply Inventory
  - Cityworks Storeroom
  - Firemen and Captains Audit
  - Virtual Transfer
  - Physical Transfer
- Phase 2: Equipment Inspections
- Phase 3: Station Inventory



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# Upcoming Projects

- Load Balanced Production Environment
- Tablet Switch-over
- Mobile Application Development
- Property Asset Clean-Up
- ROW: Utility Antenna/Pole Permits
- PLL Public Access Portal
- SAW Grant – WWTP Asset Management Re-vamp
- Cemeteries



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# Cemeteries

Andy Skelton



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# City of Lansing Cemeteries Mapping

- City of Lansing owns three cemeteries: Mount Hope, Evergreen, and North, managed by Parks & Recreation Department, maintained by Public Service Department, Operations & Maintenance Division
- Burial and ownership records all on paper
- Burial process is cumbersome
- No one central location for data
- Sometimes led to one gravesite being sold to more than one family
- Two-sided project: internal AMS (Cityworks) and public webmap



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# City of Lansing Cemeteries Mapping

- Data Collection:
  - Records digitization: Entering in names of persons interred as well as grave owners
  - Names recorded in a volume of books: “The Books of the Dead”
  - Each cemetery section has its own book
  - Each burial or ownership record is entered into a database
  - Each gravesite is assigned a unique identifier
  - Gravesites can be available, unavailable, or occupied
    - Available: no one interred, no owner
    - Unavailable: owned but no one interred
    - Occupied: Owned with person interred



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# City of Lansing Cemeteries Mapping

- Data Collection:
  - Gravesite Points: Each gravesite is collected using surveyor's total station
  - Leica TS 15 total station, with GNSS provided by Leica TS 14
  - One point for each grave, occupied/marked or not
  - Each grave is assigned a unique identifier, the same as in the burial records DB
  - ID contains cemetery abbreviation, section, plot number, grave number
    - Example: Grave 4 in plot 121, section Y of Mount Hope Cemetery is MY12104
  - Once all records and points are collected, points are converted to a point feature class in ArcMap; records are merged into the feature class



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# City of Lansing Cemeteries Mapping

- Cityworks Cemeteries Work:
  - Work orders for each cemetery division
  - Burials work order is the most complex

**Custom Fields**

Category: CEMETERY BURIAL

WORK ORDER NUMBER	
RECEIVED DATE	
NAME OF DECEASED	
AGE	
CEMETERY	
SECTION	
LOT	
GRAVE	
BURIAL DATE/TIME	
FUNERAL HOME	
NEXT OF KIN	
NEXT OF KIN ADDRESS	
VETERAN?	
VAULT	
CREMAINS?	
GREENS	
TAKEN BY	
REMARKS	Use Comments Section for Remarks

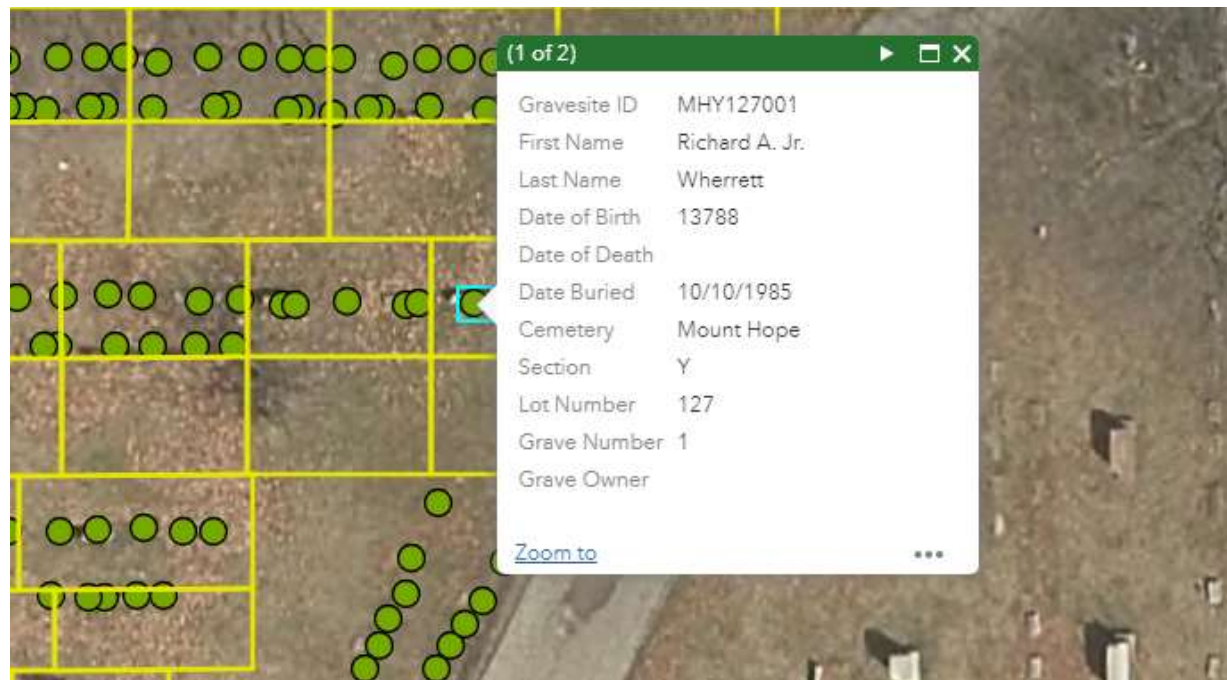
Tasks				
SeqID	Name	Description	Status	Pro
1	FAMILYMEET	Meeting with Family	CURRENT	Fal
2	GRAVEASSIGN	Grave site is assigned	PENDING	Fal
3	BURIALCARD	Final burial card is written	PENDING	Fal
4	EQOP_CHECK	Equipment Operator Checks Burial Details	PENDING	Fal
5	EQOP_DIG	Equipment Operator Digs the Grave	PENDING	Fal
6	LOWER_INTERRED	Body Interred is Lowered Into the Grave.	PENDING	Fal
7	VAULT_SEAL	Vault is Sealed	PENDING	Fal
8	EQOP_FILL	Equipment Operator Fills Grave	PENDING	Fal
9	TOPSOIL_ADDED	Topsoil is Added	PENDING	Fal
10	TAMP_FLOOD	Grave is Tamped Flat and Flooded	PENDING	Fal
11	SEED_GRAVE	Grave Site is Seeded	PENDING	Fal



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# City of Lansing Cemeteries Mapping

- Public Cemetery Map
  - Intended for public access
  - Searchable by name or gravesite
  - Useful for genealogists, families researching history





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# Real-Time Intelligence Portal

Lansing Police Department

Lansing, MI



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# Real-Time Intelligence Portal

Lyne Roberts

Lansing Police Department



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# Officers Have Information Overload

- Police are deluged with information while on patrol.
  - Emailed bulletins
  - Dispatch calls
  - Body and car camera
  - Record retrieval systems
  - Radio and phone calls
  - Online searches
  - Notes, papers, and more
- How does the officer distill the most relevant information for this crime – quickly?





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## Lansing Police Use NC4 Street Smart

- Since December 2018, Lansing Police is using NC4 Street Smart as a means to provide a common intelligence portal
- Instead of searching all of these sources, we are moving the relevant information to the NC4 portal.
- This is a secure environment
  - For Lansing law enforcement with Active Directory credentials
  - NC4 uses Microsoft Azure Government Cloud as a web-based application



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## Potential for NC4 Street Smart

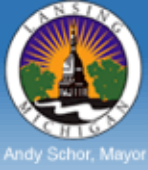
- Officers have critical real-time data in their vehicles as they patrol the community.
  - Situation-based bulletins
  - Continuously updated crime maps
  - Search historical information
  - Update incidents with latest details
- With the latest information, officers can
  - Collaborate
  - Quickly identify patterns
- Solve crimes faster



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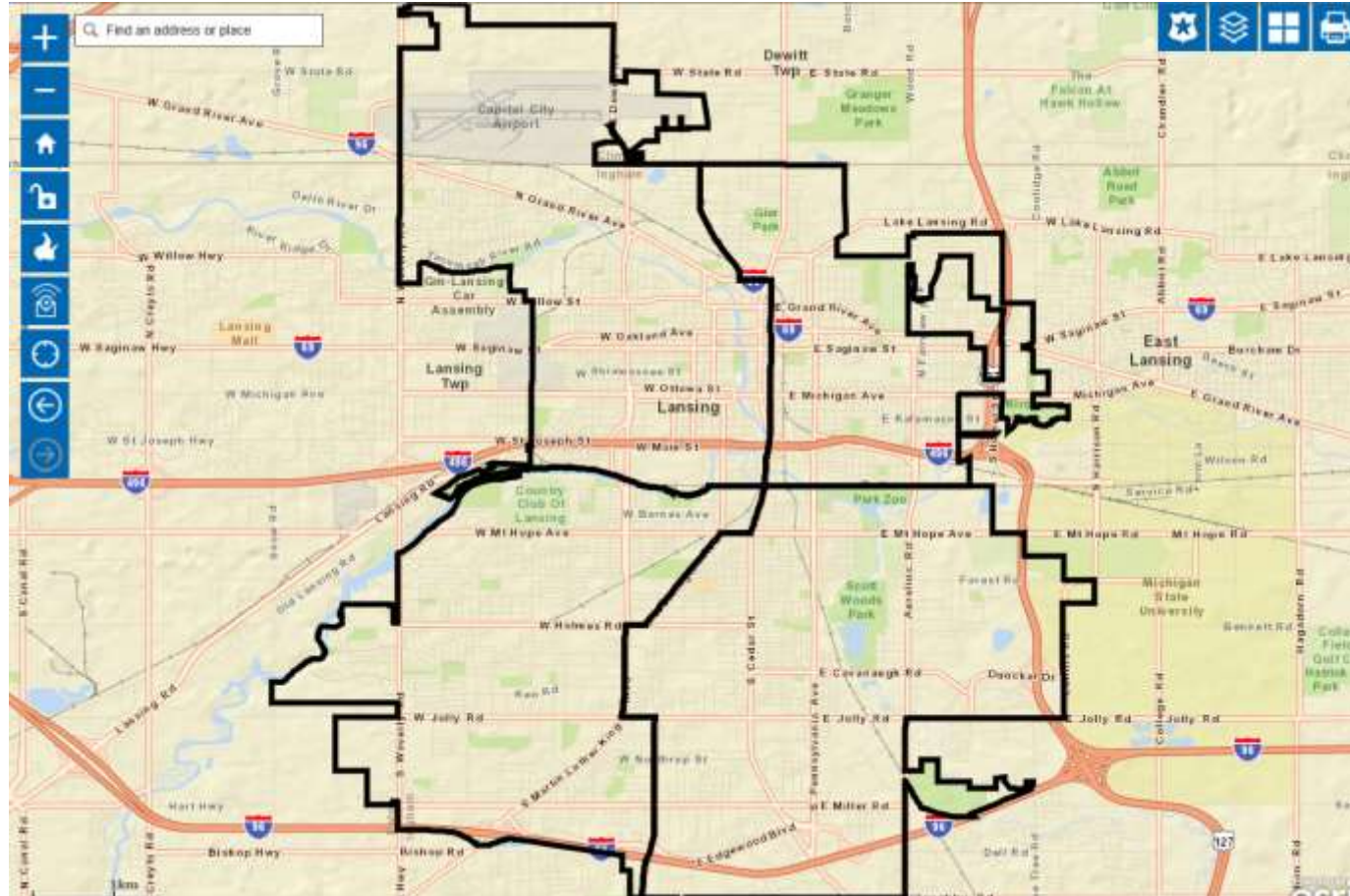
## Information Viewable on NC4

- Crime Incidents from Dispatch
- Bulletins “Be on the lookout for...”
  - Photos, document attachments
- Open Arrest Warrants
- Parolees
- Probationers
- Field Interviews
- Officer initiated blogs



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# Lansing – City Map with Sectors



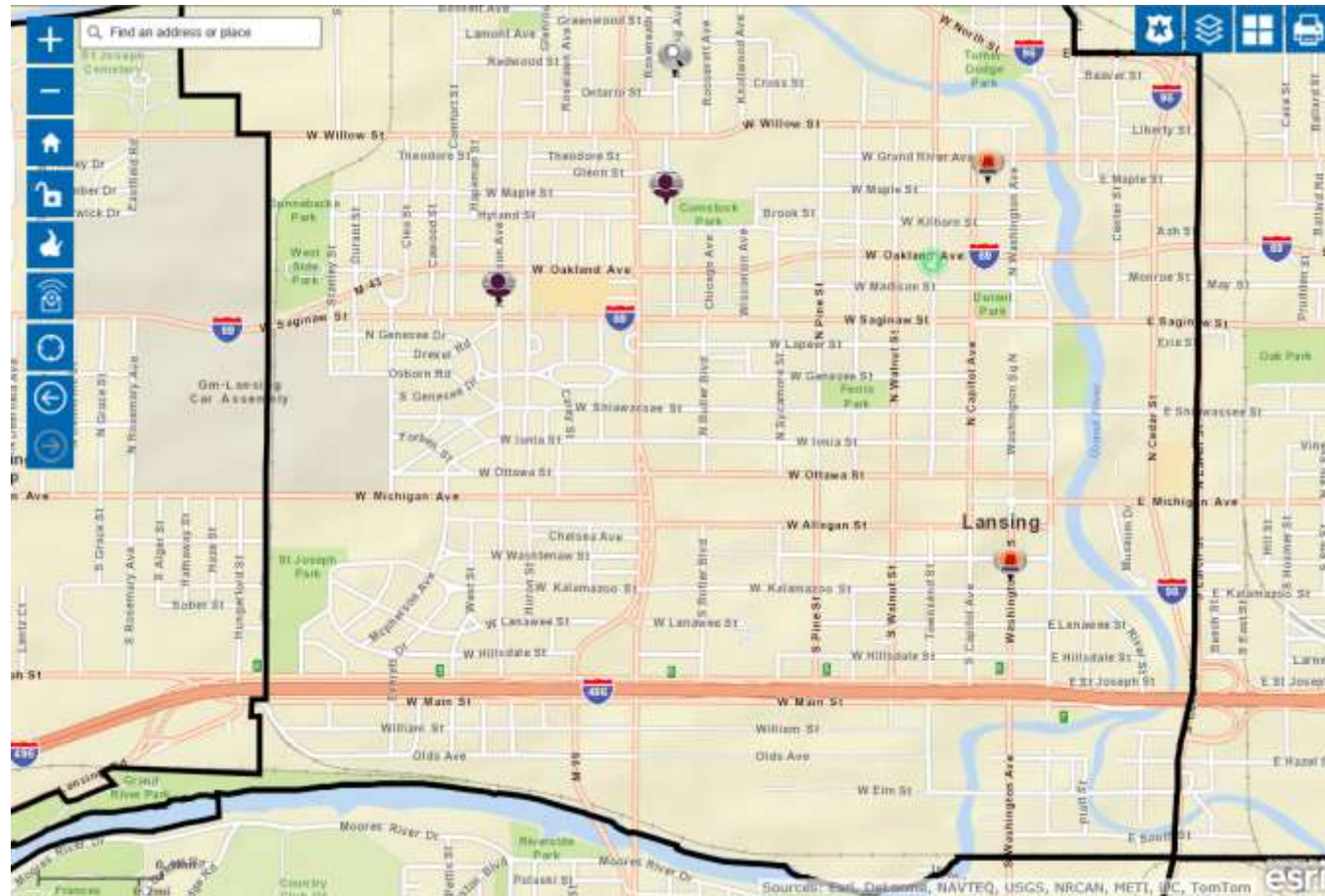


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## Bulletins “Be on the Lookout for...”





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## Initial Impact of NC4

- NC4 is now one more tool that officers can use to protect and serve the citizens, workers, and visitors to this city.
- Based on other cities that are using NC4, Lansing can more effectively:
  - Target enforcement to problem areas
  - Reduce crime
  - Solve crimes more quickly



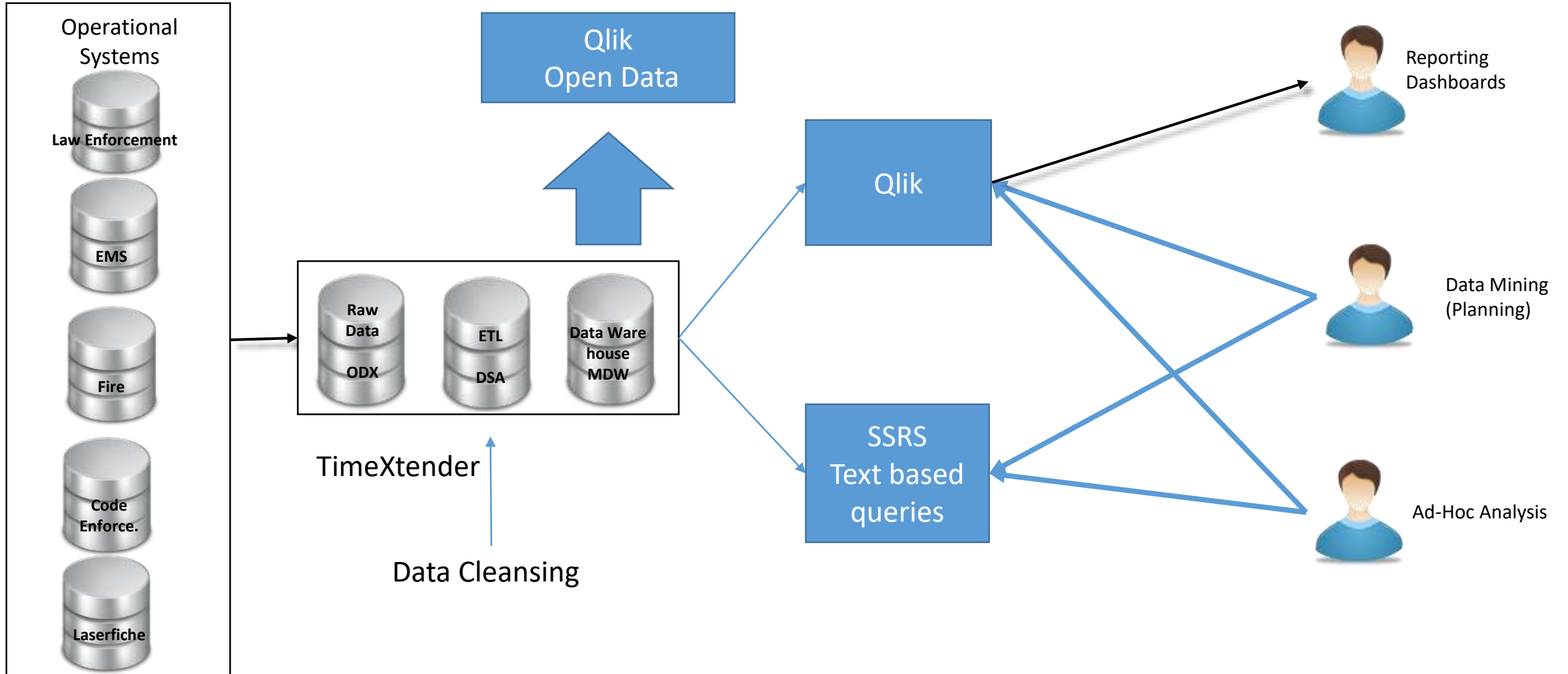
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# Data Analytics - QLIK

Rob Gerth

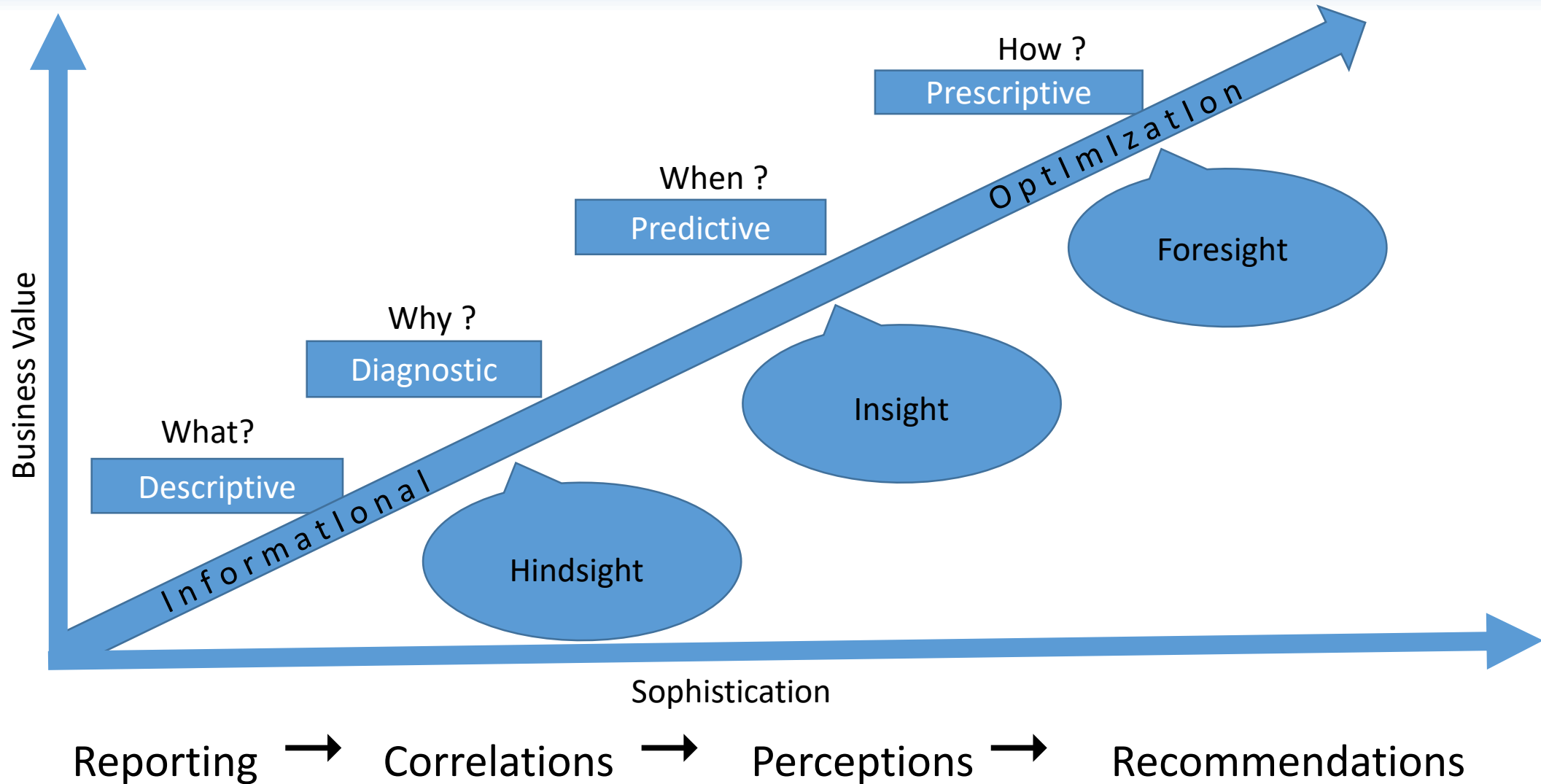
## Enterprise Data Analytics Architecture





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# Analytics

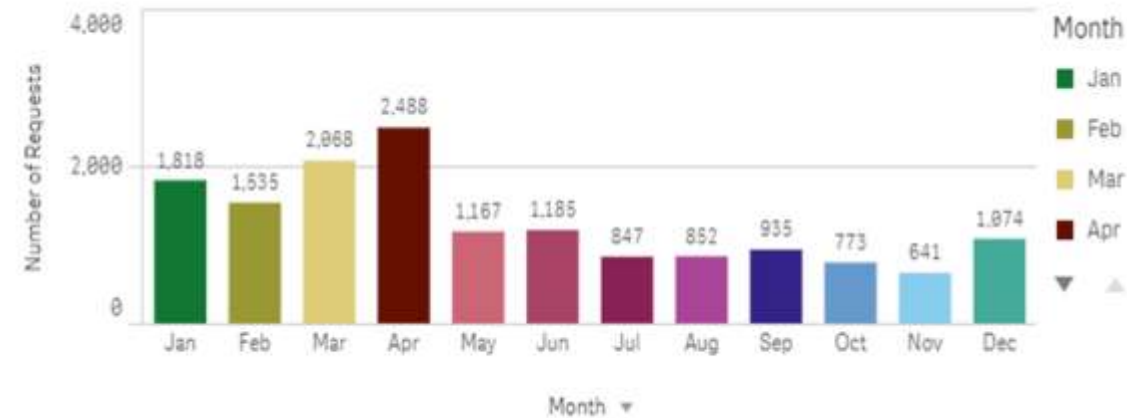




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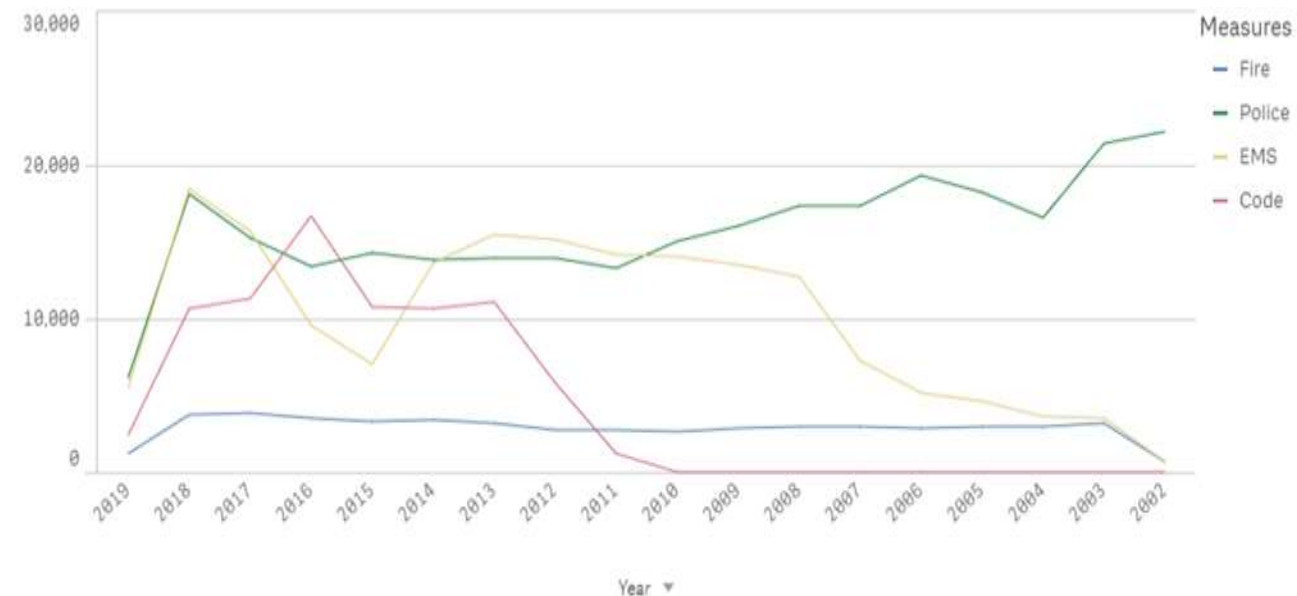
Qlik® Sense



### GIS Use in Qlik:

- Leverage new and existing maps into data analytics ecosystem
- Map features update within Qlik as they update in ArcGIS
- Use Qlik filters in conjunction with the map layers to visualize all levels of data

- Business Intelligence tool
- Self-Service Visualization with user selected filters
- Charts, graphs, maps, and tables

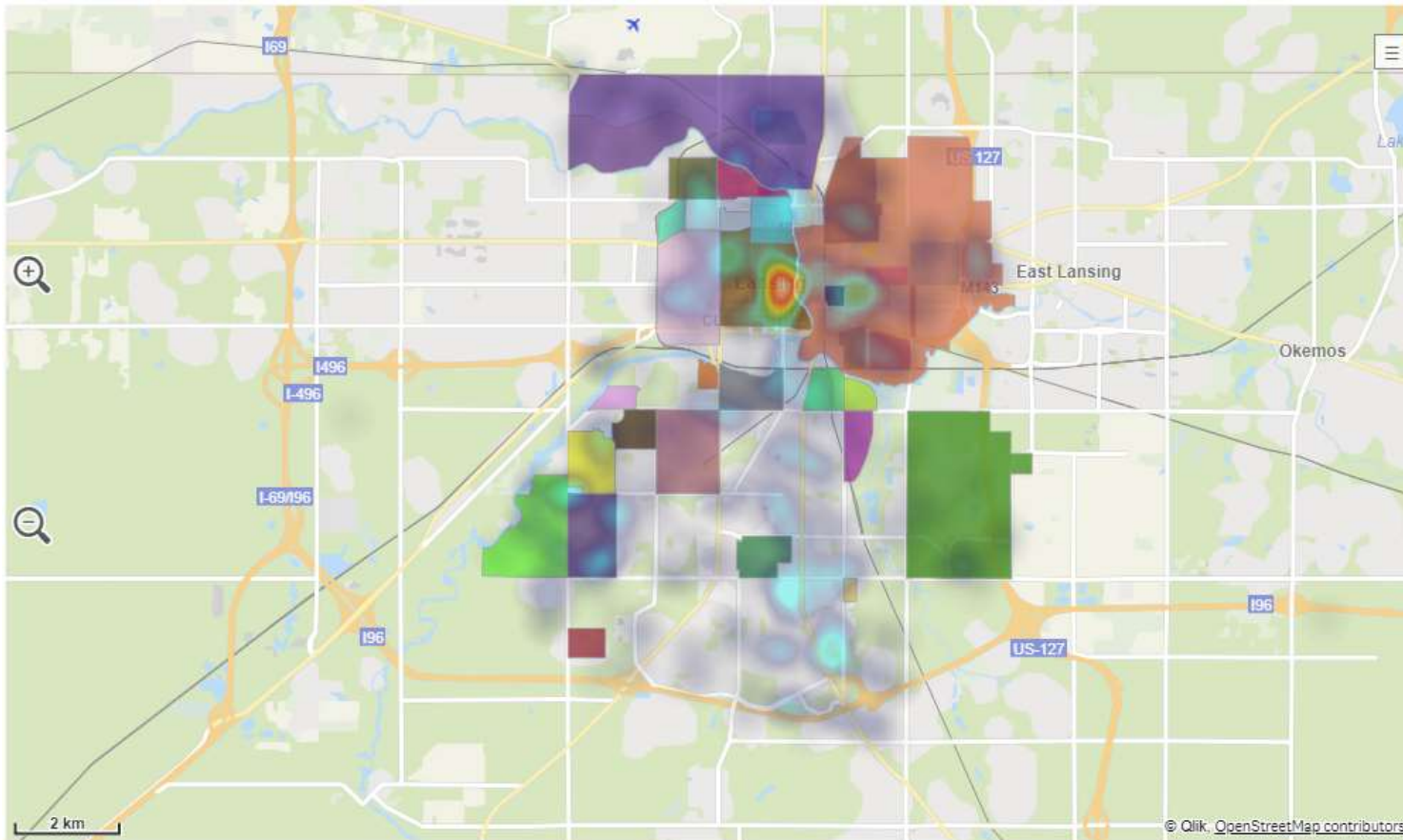




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# Neighborhoods

Look at problems affecting neighborhoods related to Code Enforcement, EMS, Fire, and Police



Incorporate ESRI mapping into the Qlik environment to overlay neighborhood boundaries.

Filter the data presented in the map based on neighborhood

Heat map to identify areas of the city based on interaction with city services.

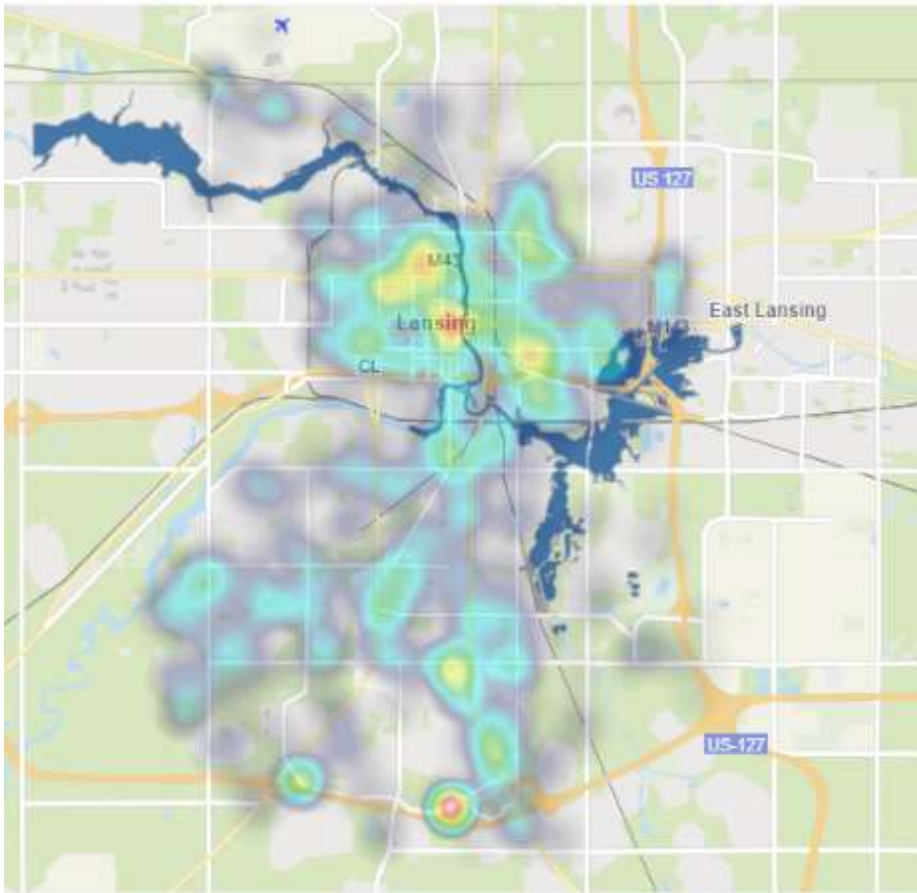


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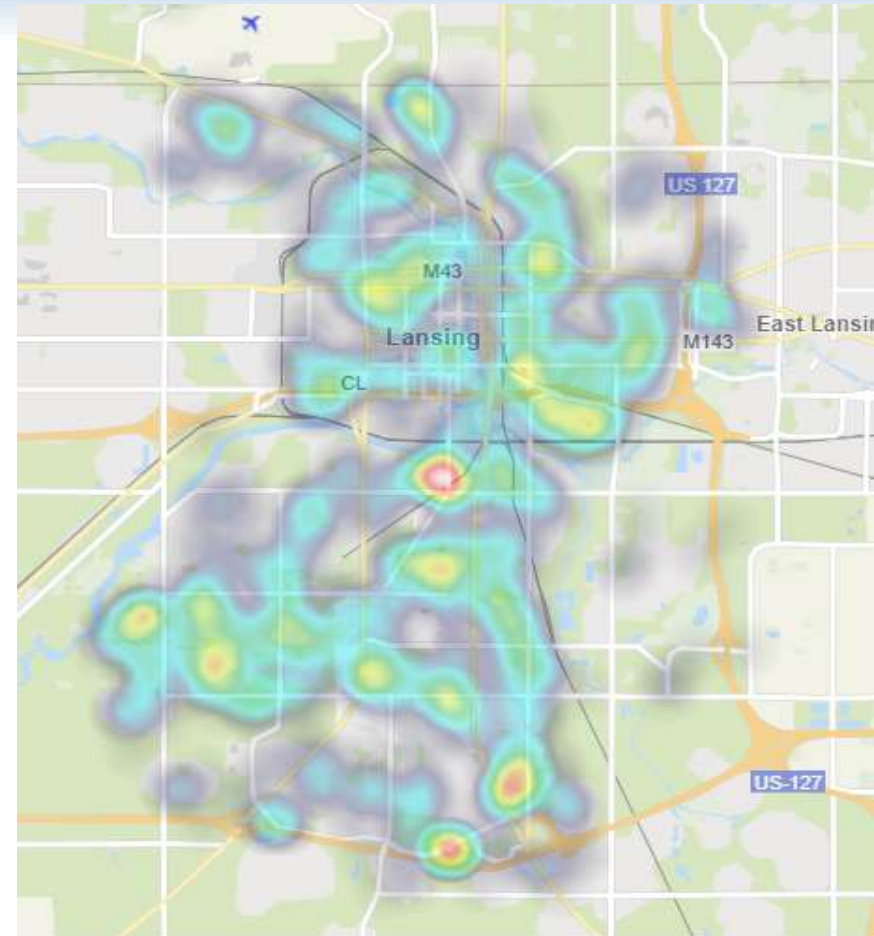
## Natural Disasters & Hazards



### How Data is Used

Understand the problems that happened and proactively look to address those problems.

Continuously update maps to examine trends and prepare for future problems.



Areas heavily affected by Ice Storm of 2013

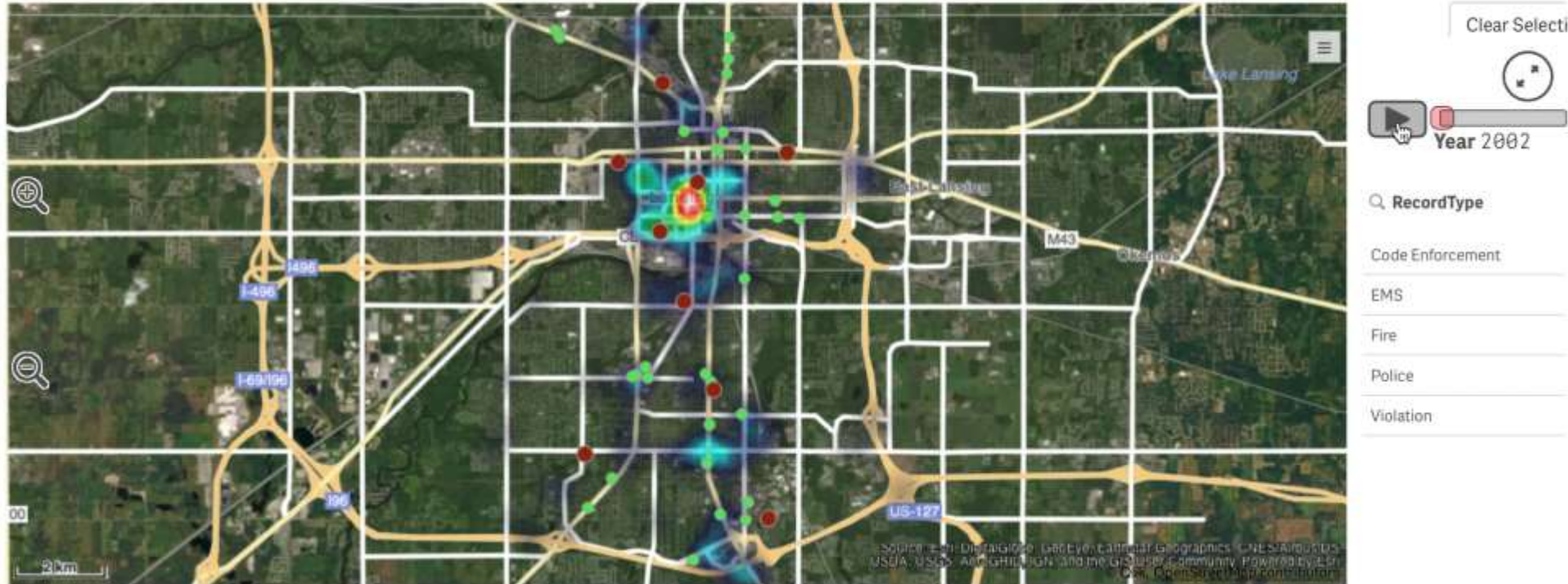
Look at the most heavily affected areas of the city during the dates of flooding



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# Marijuana Dispensaries

HeatMap



Evaluate trends  
over time.

Map locations of  
Marijuana dispensaries.

Look at the relationship  
between city events and  
locations.



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# Questions?